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10/591,662	09/05/2006	Karl Ott	295335US0PCT	3137
22850 7590 09/04/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER FRANK, NOAH S				
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oblonpat@oblon.com

jgardner@oblon.com



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

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Application Number: 10/591,662
Filing Date: September 05, 2006
Appellant(s): OTT ET AL.

Jay Rowe
For Appellant

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EXAMINER'S ANSWER

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This is in response to the appeal brief filed 5/29/09 appealing from the Office action
mailed 10/29/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2005/0043467	Bruchmann	2-2005
DE 101 61 156	Bruchmann	6-2003
4,757,095	Galan	7-1988

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruchmann et al. (DE 101 61 156, citations refer to the English equivalent, US 2005/0043467) in view of Galan et al. (US 4,757,095).

Considering Claims 15-16, 25: Bruchmann et al. teaches aqueous dispersions comprising a polyurethane (¶0001) composed of diisocyanates having 4 to 12 carbons (¶0018), diols of which 10 to 100 mol% have a molecular weight of from 500 to 5000 and 0 to 90 mol% gave a molecular weight of from 60 to 500 (¶0003-5), and monomers containing at least one isocyanate group or at least one isocyanate-reactive group and further carrying at least one hydrophilic group or potentially hydrophilic group (¶0006). The polyurethane is made by preparing polyurethane prepolymers, dispersing them in water, and then chain extending them with polyamines (¶0058).

Bruchmann does not teach preparing the polyurethane in the presence of N-ethylpyrrolidone or N-cyclohexylpyrrolidone. However, Galan et al. teaches using lactones and lactams in the preparation of polyurethanes (Abs). A particularly suited lactam is N-ethylpyrrolidone (6:35-40). Bruchmann and Galan are analogous art

because they are from the same field of endeavor, namely polyurethane additives. At the time of the invention a person of ordinary skill in the art would have found it obvious to have used N-ethylpyrrolidone, as taught by Galan, in the invention of Bruchmann, in order to make a polyurethane product with the unexpected and improved properties when compared to polyurethane elastomers which are prepared in the absence of either a lactone or a lactam, such as good cold temperature flexibility (2:5-15 of Galan).

Considering Claims 17-22: Bruchmann et al. teaches the hydrophilic monomer being dimethylolpropionic acid (¶0044).

Considering Claim 23: Bruchmann et al. teaches reacting the monomers in the presence of a cesium salt (¶0009).

Considering Claim 24: Bruchmann et al. teaches using the dispersions for coating articles made of plastic, paper, textile, or leather (¶0090).

(10) Response to Argument

Rejection of Claims 15-25 under 35 U.S.C 103(a) as being unpatentable over Bruchmann et al. (DE 10161156; equivalent to U.S. 2005/0043467) in view of Galan et al. (U.S. 4,757,095).

Comment [U1]: you need the same sub-headings as appellant used (even if there is only one... otherwise the BPAI may send it back.)

In response to appellant's arguments that Bruchmann reasonably suggests that if a solvent is used, it should have a boiling point of from 40 to 100°C, this is only when the acetone process is used. Bruchmann teaches that, "In the acetone process an ionic polyurethane is prepared from components (a) to (c) in a water-miscible solvent which boils at below 100°C under atmospheric pressure" (¶0083). However, Bruchmann also

teaches the prepolymer mixing process (§0084), which does not require the same solvents as those used for the acetone process. While Bruchmann teaches removing the majority of the solvent via distillation (§0085), this is only necessary when a large amount of solvent is used, such as in the acetone process. Bruchmann teaches minimizing the solvent to less than 10%, and particularly free from solvents (§0085), however there would be no need to distill off the majority of the solvent if less than 10% had been used at the outset. As the prepolymer mixing process does not require a large amount of solvent, the skilled artisan would have found it obvious to have included under 10% of N-ethylpyrrolidone in order to improve the cold temperature flexibility of the final product (2:5-15 of Galan). Additionally, Galan teaches using a prepolymer mixing process for the production of the polyurethanes containing lactams (Examples 1-6). In summation, the skilled artisan, looking to improve the cold temperature flexibility of Bruchmann's polyurethanes, would incorporate the N-ethylpyrrolidone of Galan, and knowing that it would not be possible to use the acetone process, would therefore choose the prepolymer mixing process. Furthermore, the skilled artisan would still adhere to Bruchmann's teachings by keeping the solvent level below 10%.

In response to appellant's arguments that Bruchmann and Galan are not analogous art, both are polyurethanes, and differ only in their intended use. Bruchmann is the reaction product of a diisocyanate, polyols, and a hydrophilic compound which allows it to be dispersed in water. It may be made via a prepolymer (§0084), which is subsequently chain extended and applied as an aqueous dispersion which dries into a coating. Galan is also a reaction product between a diisocyanate and a polyol. The

prepolymer is then reacted with another polyol to form the final polyurethane product. A blowing agent may be used when a foam is desired, although when cast products are made (1:34-36), no blowing agent would be present. While there may be subtle differences in the particular choice of reactants when making an elastomer versus a hard coating, the general reaction is identical, namely that between an isocyanate and a hydroxyl group. Galan specifically teaches that, "lactones and lactams act as freezing point depressants for isocyanate terminated prepolymers as well as improving the cold temperature flexibility of polyurethane-polyurea products prepared from these prepolymers" (1:25-30). There is no question that Bruchmann teaches isocyanate terminated prepolymers and polyurethanes made from these. While Galan's specific invention is towards a foam or cast elastomer, the teaching clearly applies to all polyurethanes.

KSR sets forth that when considering obviousness of a combination of known elements, the operative question is thus "whether the improvement is more than the predictable use of prior art elements according to their established functions." MPEP 2141.I. In the instant case, applicant has recognized that N-(cyclo)alkyl-pyrrolidones lead to improved flexibility, particularly lower-temperature flexibility (§0127), something which is known in the prior art from Galan. While Galan uses this improvement for polyurethane foams as opposed to films, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. MPEP 2141.I. The technique of using N-

Art Unit: 1796

(cyclo)alkyl-pyrrolidones is art recognized to improve cold temperature flexibility of polyurethanes, and as such, the selection of a known material based on its suitability for its intended use will support a *prima facie* case of obviousness. MPEP 2144.07.

In response to appellant's arguments that one would not expect a property of a shoe sole to apply to a thin film coating, the Examiner notes that the claims are all process claims, not product. Furthermore, it is not being argued that the flexibility of a shoe sole will be different than that of a thin film coating, merely that lactones and lactams will *improve* cold temperature flexibility of polyurethanes, regardless of their intended use.

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(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Noah Frank/

Conferees:

Mark Eashoo

/Mark Eashoo/

Supervisory Patent Examiner, Art Unit 1796

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/Anthony McFarlane/